

**REMARKS**

Claims 1-20 are all the claims pending in the application.

Initially, the Examiner is respectfully requested again to indicate that the drawings have been accepted.

**I. Response to Rejection of Claims 1-2, 5, 8, 15 and 19 under 35 U.S.C. § 103(a)**

Claims 1-2, 5, 8, 15 and 19 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Derule et al. (US 5,683,751) in view of Emmonds (US 6,576,820).

Applicants respectfully traverse the rejection.

Claim 1 is directed to a method of treatment by carboxylation, before shaping, of a metal surface in oxidizing conditions in relation to the metal, comprising bringing the said metal surface selected from the group consisting of zinc, iron, aluminum, copper, lead, alloys thereof, galvanized steel, aluminium-coated steel, and copper-coated steel into contact with an organic or hydro-organic aqueous bath comprising at least one organic acid in free form or in the form of salt, wherein: the said organic acid is a saturated or unsaturated aliphatic monocarboxylic or dicarboxylic acid, the said organic acid is in solution and/or in emulsion in the bath at a concentration greater than 0.1 mole/litre, and the pH of the bath is acidic.

In the present invention, the metal surface is treated under oxidizing conditions. The specification discloses that different oxidants, such as dissolved oxygen ( $O_2$ ), nitrates ( $NO_2^-$ ), hydrogen peroxide ( $H_2O_2$ ) or perborates ( $BO_3^-$ ) can be used. See page 8 and 17. Specifically, in the present invention, the reaction involved is carboxylation, which is a reaction of an acido-basic type. For example, if a zinc-covered metal sheet were used, the zinc present at the surface is oxidized by the acid present in the reaction medium and is transferred into the

reaction medium as  $Zn^{2+}$  ions. The ions then recombine with the carboxylate present in the medium, which is the conjugated base of the carboxylic acid dissolved in the medium. As a result, a precipitate of Zn carboxylate is formed on the sheet.

The Examiner recognizes that Derule does not teach oxidizing conditions as recited in claim 1. To make up for the deficiencies of Derule, the Examiner cites Emmonds as teaching a process for electrocoating metal blanks by immersing metal blanks and electrodes in an electrolytic coating bath (Fig. 2).

Applicants respectfully disagree.

It is respectfully submitted that one of ordinary skill in the art would not be motivated to modify Derule based on Emmonds.

The metal surface of Derule is not dissolved, and thus, does not react with the carboxylic acid to form a carboxylate conversion layer. Therefore, one of ordinary skill in the art would not be motivated to modify Derule by dissolving the surface of the metal layer.

In addition, Emmonds describes an electrodeposition process of a polymer coating onto a metal surface. See col. 9, line 1 et seq. That is, Emmonds discloses deposition of an organic coating by cataphoresis. The process of Emmonds consists of depositing a primer layer by electrolytical deposition of a resin onto the metal surface, then depositing onto said primer layer a top coat layer by electrolytical deposition of a second resin. Emmonds does not describe a carboxylation process where a carboxylic acid contained in the bath, in which the metal surface is immersed, reacts alone with the metal surface in order to form a carboxylate layer. Thus, Emmonds relates to coating metal sheets with at least a polymer layer, and does not disclose coating a metal sheet with a conversion layer of crystals of a carboxylate of a metal.

Accordingly, the process of Emmonds is different from the process of the present invention.

Therefore, one of ordinary skill in the art would not look to Emmonds to modify Derule to arrive at the claimed invention.

Furthermore, even if Derule and Emmonds were somehow combined, the combination would not teach or suggest all of the elements of claim 1 as required under §103.

For the foregoing reasons, it is respectfully submitted that a *prima facie* case of obviousness has not been established and that claims 1-2, 5, 8, 15 and 19 are patentable over the cited art.

Withdrawal of the rejection is respectfully requested.

**II. Response to Rejection of Claims 1-7, 10-11, 14, 16 and 18-20 under 35 U.S.C. § 103(a)**

Claims 1-7, 10-11, 14, 16 and 18-20 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson et al. (US 4,720,405) in view of Derule and Blum (US 5,331,039).

Applicants respectfully traverse the rejection.

The Examiner takes the position that Carson does disclose a carboxylic acid because a carboxylic acid is required to form the polyester, and thus, there will be a carboxylic acid in the coating solution. In addition, the Examiner asserts that the concentration of carboxylic acid is a result-effective variable that affects the final coating layer, and thus, one of ordinary skill in the art would be motivated to routinely optimize the concentration. Further, the Examiner relies upon Blum as teaching a coating composition for metal surfaces comprising carboxylic acids and hydrogen peroxide (col. 5, lines 23-41 and col. 12, lines 37-51), and takes the position that one of ordinary skill in the

art would be motivated to use the hydrogen peroxide of Blum in the composition of Carson and Derule to jump start the redox and polymerization reactions.

Applicants respectfully disagree.

Claim 1 recites "organic acid in free form or in the form of salt".

As noted previously, Carson relates to a method of providing a substrate with a flexible multilayer coating comprising as one component an organic polyol, such as acrylic polyols, polyester polyols, polyurethane polyols and polyether polyols. *See Abstract*, col. 1, lines 62-63 and col. 2, lines 52-54. Carson discusses polyester polyols at col. 3, line 15 et seq. and that the polyester polyols can be prepared by the polyesterification of an organic polycarboxylic acid or anhydride thereof with organic polyols and/or an epoxide. Although the acid component of the polyester may consist of a C2-C18 carboxylic acid, nothing in Carson discloses or suggests that this carboxylic acid could be in the coating in an isolated state or in a salt state which would allow it to react alone with the metal surface in order to form a carboxylate layer.

Thus, the disclosure relied upon by the Examiner is directed to the acid component of the polyester, i.e., the acid portion of the polyester. The acid portion of the polyester is clearly not an organic acid in free form or in the form of a salt as recited in claim 1.

In addition, one of ordinary skill in the art would not look to Derule or Blum to modify Carson to arrive at the claimed invention.

For the above reasons, it is respectfully submitted that a *prima facie* case of obviousness has not been established, and that claims 1-7, 10-11, 14, 16 and 18-20 are patentable over the cited art.

Withdrawal of the rejection is respectfully requested.

**III. Response to Rejection of Claims 8-9 under 35 U.S.C. § 103(a)**

Claims 8-9 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson and Derule, in view of Blum and Toman (US 4,877,838).

Applicants respectfully traverse the rejection.

Claims 8-9 depend indirectly from claim 1, and thus, it is respectfully submitted that these claims are patentable for at least the same reasons as claim 1 discussed in Section II above.

Accordingly, withdrawal of the rejection is respectfully requested.

**IV. Response to Rejection of Claims 12-13 under 35 U.S.C. § 103(a)**

Claims 12-13 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson and Derule, in view of Blum and Hughes et al. (US 6,206,982 B1).

Applicants respectfully traverse the rejection.

Claims 12-13 depend, directly or indirectly, from claim 1, and thus, it is respectfully submitted that these claims are patentable for at least the same reasons as claim 1 discussed above in Section II.

Accordingly, withdrawal of the rejection is respectfully requested.

**V. Response to Rejection of Claim 15 under 35 U.S.C. § 103(a)**

Claim 15 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson, Derule and Blum, in view of Emmonds et al.

Applicants respectfully traverse the rejection.

Claim 15 depends from claim 1, and thus, it is respectfully submitted that claim 15 is patentable for at least the same reasons as claim 1 as discussed above in Section II.

Accordingly, withdrawal of the rejection is respectfully requested.

**VI. Response to Rejection of claim 17 under 35 U.S.C. § 103(a)**

Claim 17 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Carson, Derule and Blum, and in view of Melotik (US 3,969,152).

Applicants respectfully traverse the rejection.

Claim 17 depends from claim 1, and thus, it is respectfully submitted that claim 17 is patentable for at least the same reason as claim 1 as discussed above in Section II.

Accordingly, withdrawal of the rejection is respectfully requested.

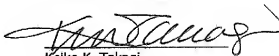
**VII. Conclusion**

For the foregoing reasons, reconsideration and allowance of claims 1-20 is respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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